Small Business Innovation Research/Small Business Tech Transfer

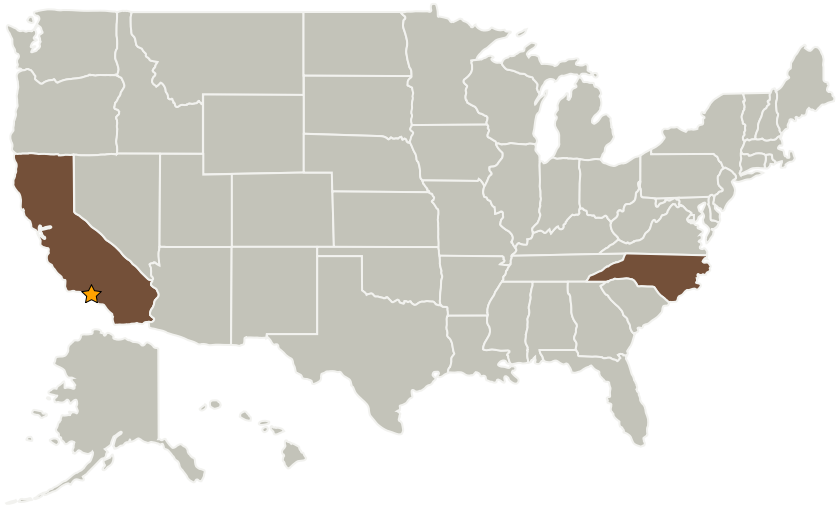
High Measurement Channel Density Sensor Array Impedance Analyzer for Planetary Exploration, Phase II

Completed Technology Project (2007 - 2009)

Project Introduction

Planetary exploration missions, such as those planned by NASA and other space agencies over the next few decades, require advanced chemical and biological marker measurement technologies that will help answer fundamental questions about the composition of the Solar System and the possibility of past and present extraterrestrial life. Electrical/electrochemical array-based systems are highly suited for space and terrestrial applications because of their robustness, high-sensitivity, low-power requirement, miniaturization capability, and diverse transducer mechanisms which permit detection of a broad range of target analytes. Scribner Associates Inc. will leverage its expertise in measurement science, analytical instrumentation for arrays, and impedance spectroscopy to develop a prototype high measurement channel density array impedance analyzer for use with existing (e.g., Mars Oxidant Instrument) and future chemical and biological sensor arrays for planetary exploration. The proposed low mass instrument has hundreds of measurement channels for use with arrays with a large number of sensors. The analyzer is capable of conducting DC and swept-frequency AC impedance measurement. Successful development of the impedance array analyzer will facilitate multiple mission deployments with arrays tailored to specific mission objectives therefore ensuring efficient investment of NASA resources.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Scribner Associates Incorporated	Supporting Organization	Industry	Southern Pines, North Carolina

Primary U.S. Work Locations	
California	North Carolina

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes